

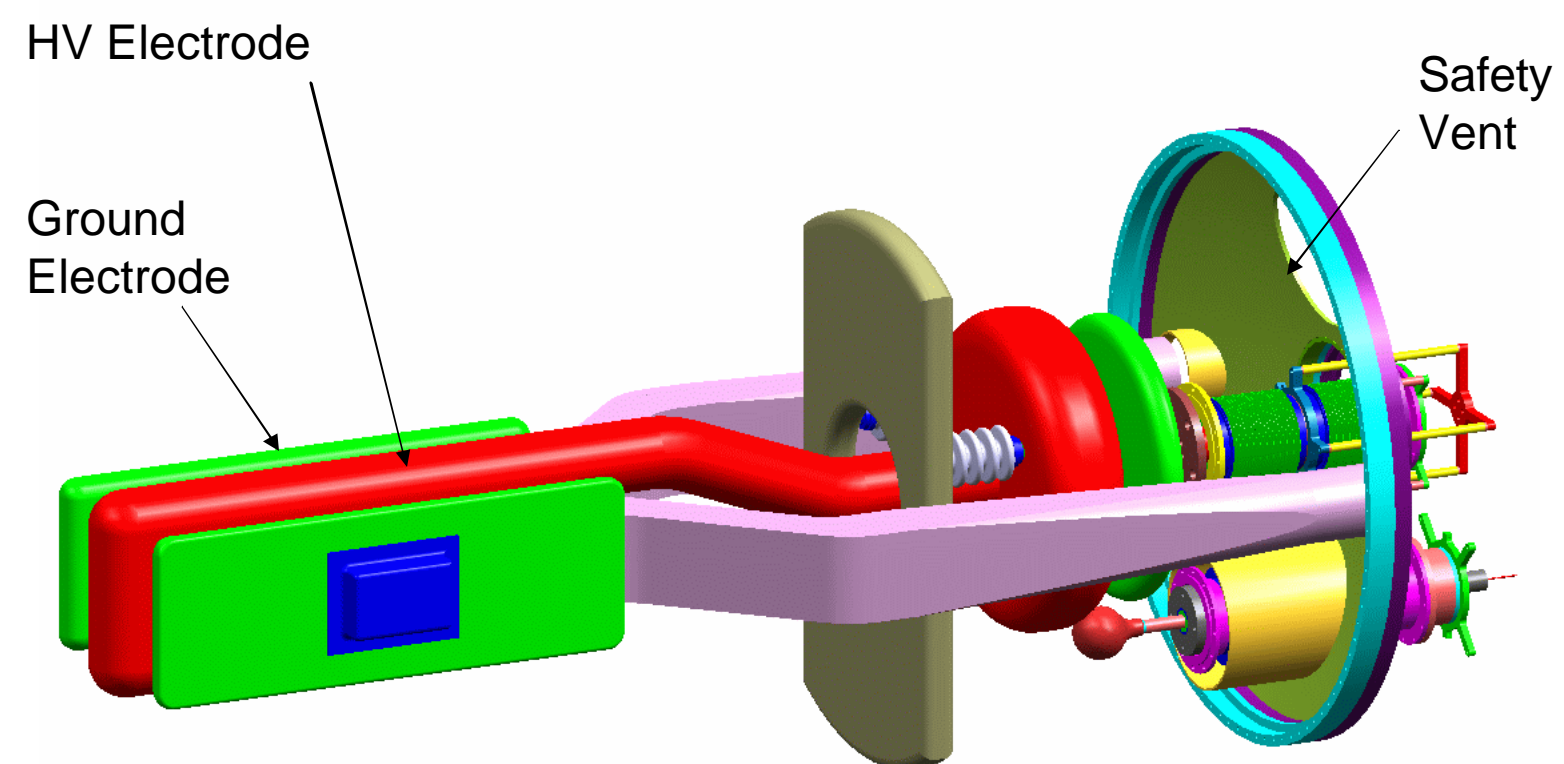
EDM Engineering Plan for CDR

Jan Boissevain, 4-15-04

Current Straw-man Cryostat

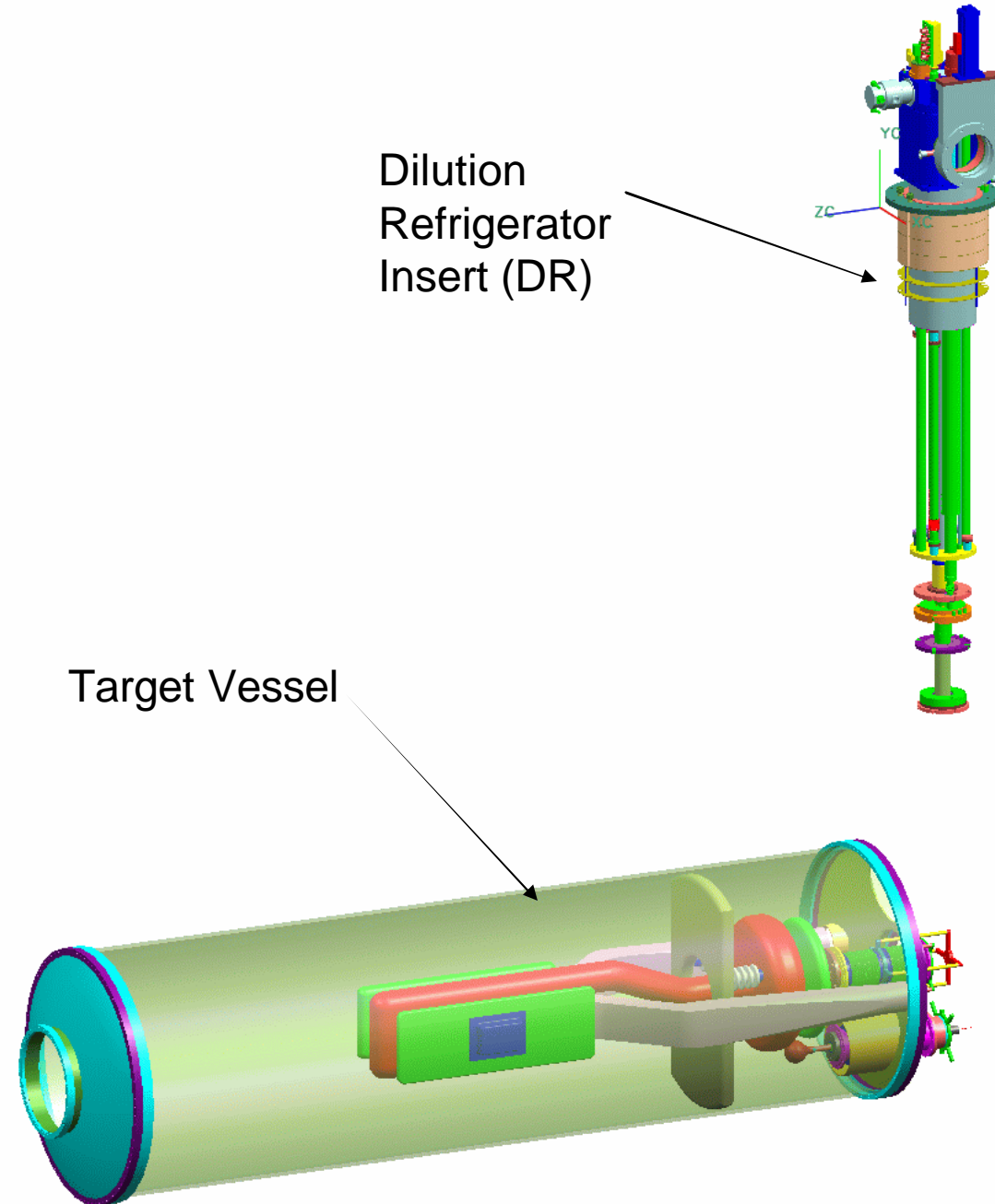
- LHe4 Target Enclosure
 - G10 Tube w/ Metal Flanges
 - Kapton Seals => Lightweight Metal Flanges
 - Endcaps: Metal Flanges/G10 Inserts?
 - Target Cell/Electrode/HV Generator Insert
 - Downstream Services
 - He4 Safety Vent

Target Vessel Insert Assembly



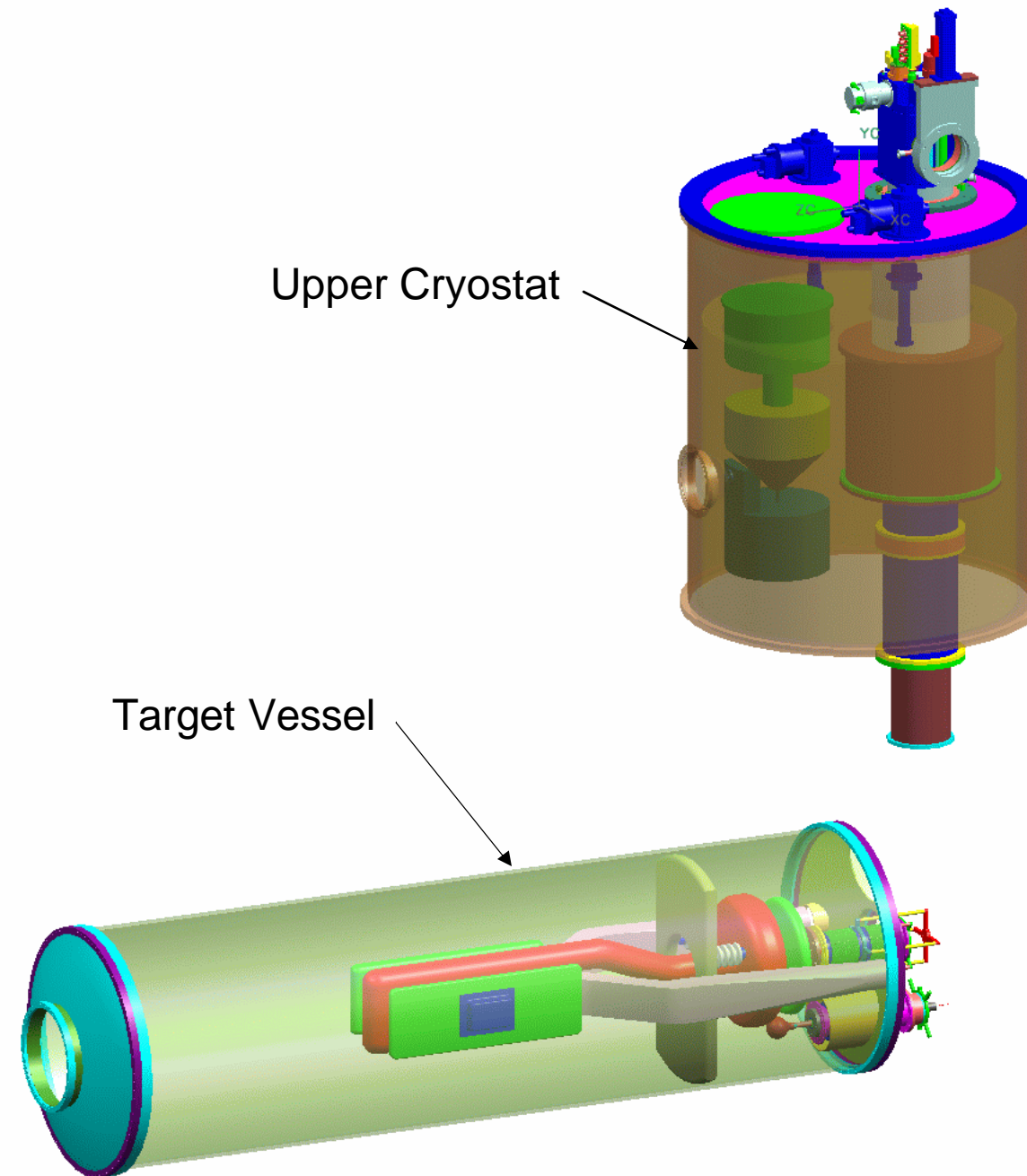
Dilution
Refrigerator
Insert (DR)

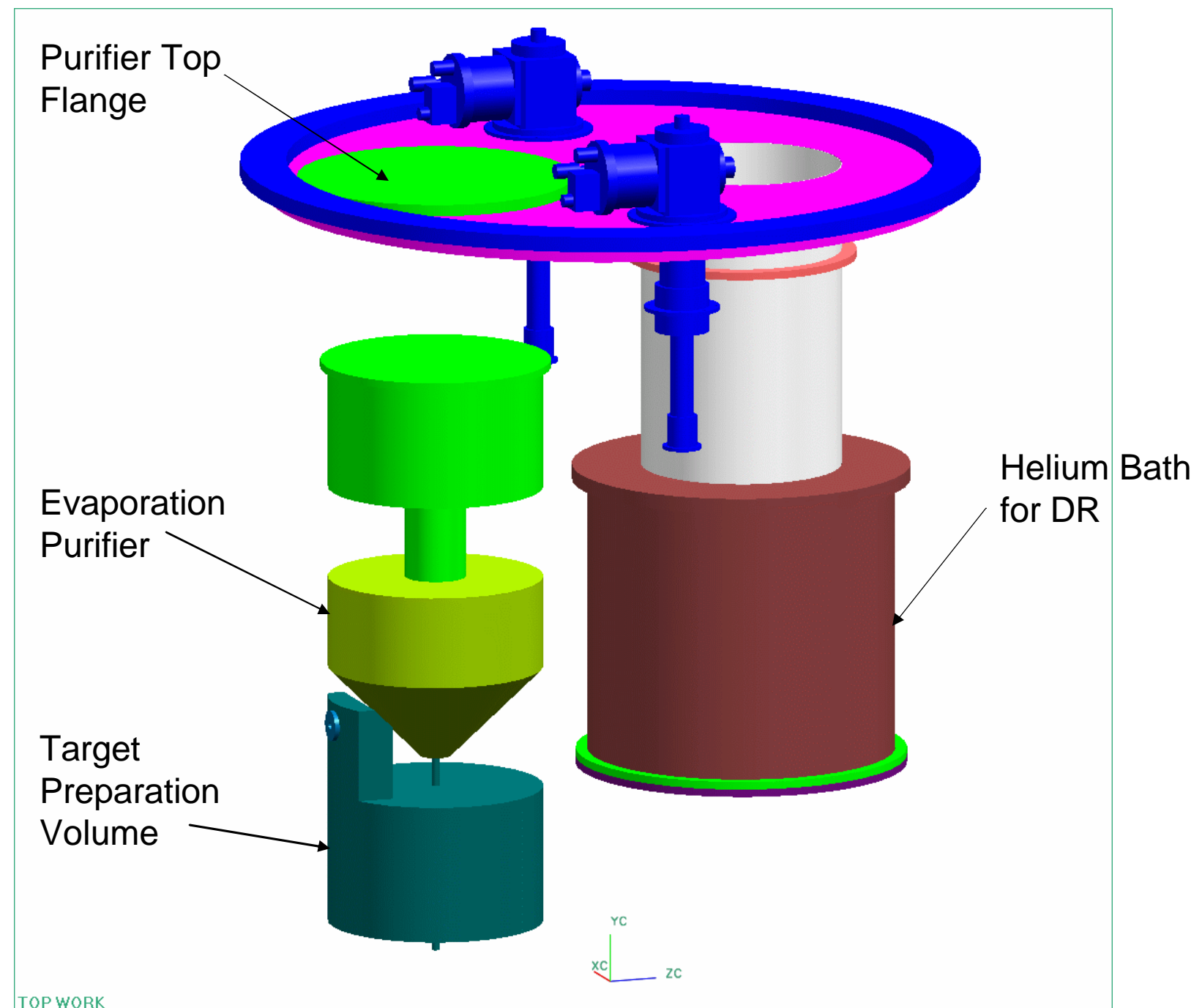
Target Vessel



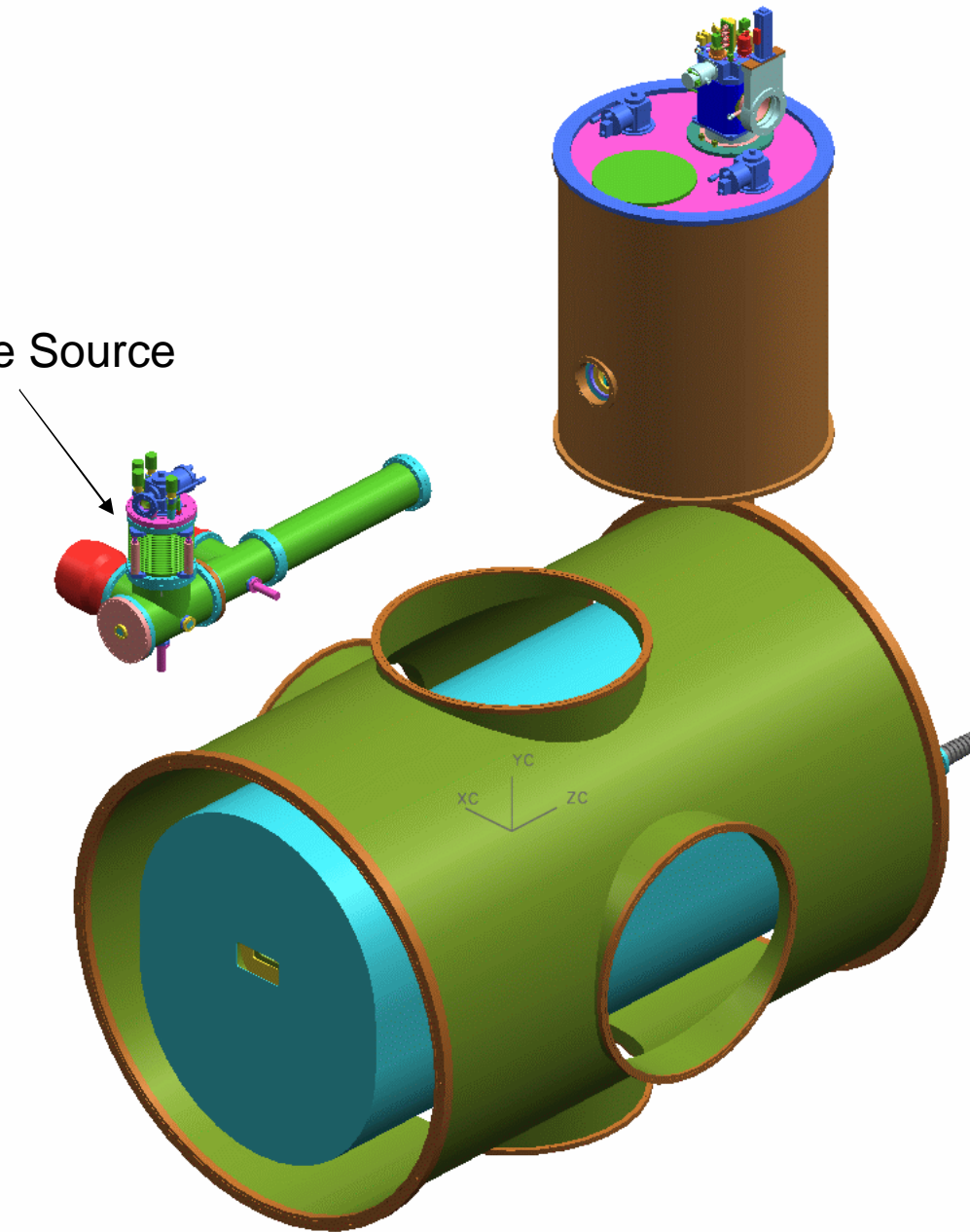
Current Straw-man Cryostat (2)

- Lower Cryostat
 - Cylindrical Arrangement
 - Metglas Shield outside Target Vessel
 - External RF Coils
 - External CosT
- Upper Cryostat
 - Downstream Horizontal Offset Location
 - Possible Isolation from Target Enclosure
 - Evaporation LHe4 Purifier
 - Target Prep. Volume w/ ^3He Source Connection





^3He Source



Current Straw-man Cryostat (3)

- Missing Features
 - No Neutron Guide in Target Vessel
 - Magic LHe Super-Fluid Tight Valve
 - Kapton Seal?
 - Polarized ^3He Friendly?
 - UCN Friendly?

Future EDM Tests?

- Kapton Super-Fluid LHe Sealing (EEDM)
- Evaporation Method of Helium Clean-up
- Polarized ^3He Injection Into SF LHe4
- SQUID Detection of Pol. ^3He Precession
- Valve Design

EDM CDR Configuration

- Decision needed in July
- Design for both SNS and LANSCE?
- He4 Liquefier?

EDM CDR Calculations

- Electric Field Uniformity
- Magnetic Field Uniformity
- RF Field?
- Magnetic Shielding?
- Pressure Vessel Calculations
- LHe4 Safety Vent